CASE STUDY

SAVING ENERGY IN VIRGINIA

Adding Space and Reducing Energy Use in Arlington

Arlington, Virginia

In 1998, Steve Kaufman and J.D. Doliner, husband and wife, bought a charming 1925 home. Because using energy wisely was important to them, J.D. and Steve installed energy-efficient, solar, and environmentally friendly technologies in their home. By doing so they increased their comfort and decreased their utility bills.

"We looked for the ENERGY STAR® label when purchasing new appliances such as our dishwasher, clothes washer, and light fixtures with compact fluorescent bulbs," said J.D. "By using energy-efficient appliances, we save money on utility bills and make it easier to supply our energy needs from the solar electric and solar hot water heating systems on the roof." ENERGY STAR qualified products, easily identified by the ENERGY STAR label, are 15% to 30% more energy efficient than conventional consumer appliances.

Steve and J.D. also installed a variety of energy efficiency measures in the structure of the home itself. "To insulate the foundation of the house, we chose sprayed-in BioBased foam which holds its insulating properties in extreme weather conditions and does not break down over time. We increased the R-value (a measure of insulation) of the interior walls by adding a batt insulation product made from cotton textile scraps," explained Steve. The couple replaced their windows with energy-efficient, low emissivity (low-E) ENERGY STAR qualified windows that feature gas-insulated panes and special coatings to cut down on undesirable energy losses and gains.

Solar energy supplements the home's energy needs. J.D. and Steve installed a 1.1 kW photovoltaic (PV) array on their roof, which supplements their electrical needs. In addition, a domestic solar water heating system provides about 80% of the hot water used by the couple.

Their south-facing solarium uses passive solar heating. In that room, a brick floor absorbs heat through south facing windows and, due to its thermal mass, radiates warmth long after sunset. Ensuring that a maximum amount of heat can be captured during the winter, the solarium's windows do not have low-E coatings. When summer rolls around, the angle of the sun is high enough that light neither strikes the windows nor overheats the room. Two 90%+ energy-efficient furnaces provide supplemental heating for the home and, in the summer, high-efficiency air conditioners keep it cool.

Perhaps the most remarkable aspect of Steve and J.D.'s home is that although a renovation increased living space by 50%, energy consumption decreased by more than 40%. On a recent bill, "the charge for electricity was just $7!" exclaimed J.D.

"We're starting a family now and want to raise children in a household that reflects our values," says Steve and J.D. "By making our home as energy efficient as practical, we're creating a safer and more secure future for our own children and other families throughout the community."

HIGH PERFORMANCE FEATURES OF THE DOLINER/KAUFMAN HOME

- ENERGY STAR qualified refrigerator, clothes washer, hot water heater, and lighting
- Increased interior wall and foundation insulation
- Energy-efficient windows
- High efficiency furnaces
- High efficiency air-conditioners
- 1.1 kW photovoltaic array and domestic solar hot water system